Navy Personnel Research and Development Center
San Diego, CA 92152-6800 NPRDC TR 87-19 March 1987

The Course Evaluation System

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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

AD-A181 658-5.21

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b RESTRICTIVE MARKINGS
2a SECURITY CLASSIFICATION AUTHORITY	3 DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.
2b DECLASSIFICATION / DOWNGRADING SCHEDULE	
4 PERFORMING ORGANIZATION REPORT NUMBER(S) NPRDC TR 87-19	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a NAME OF PERFORMING ORGANIZATION Navy Personnel Research and Development Center 6b OFFICE SYMBOL (If applicable) Code 51	7a. NAME OF MONITORING ORGANIZATION
6c ADDRESS (City, State, and ZIP Code) San Diego, CA 92152-6800	7b. ADDRESS (City, State, and ZIP Code)
8a NAME OF FUNDING / SPONSORING ORGANIZATION 8b OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c ADDRESS (City, State, and ZIP Code)	10 SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO: 62233 / PROJECT NO: NP2A / TASK NO: 03 / WORK UNIT ACCESSION NO:
11 TITLE (Include Security Classification) The Course Evaluation System	
12 PERSONAL AUTHOR(S) Ellis, John; Knirk, Frederick; Taylor, Barbara; and McDonald, Barbara	
13a TYPE OF REPORT Technical 13b TIME COVERED FROM 85 Oct TO 86 Oct	14 DATE OF REPORT (Year, Month, Day) 1987 March 15 PAGE COUNT 62
16 SUPPLEMENTARY NOTATION	

17 COSATI CODES		
FIELD	GROUP	SUB-GROUP

18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
Instructional system development, quality control, quality assurance.

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

In the face of increasing pressures on the training system to increase its efficiency and effectiveness, the improvement of Navy classroom training is an important issue. This report describes the Course Evaluation System (CES) which is a prescriptive methodology for evaluating the quality of classroom training. It is designed to give course managers and instructors the capability to pinpoint problems in ineffective courses and make effective revisions. This will result in more efficient and effective training. It is based on the principles of systematic instructional development and on empirical work demonstrating effective instructional strategies and environments. The CES methodology has been validated in a number of applications. It consists of two major sections, the objective-test item evaluation and the instructional presentation evaluation. Each section contains check lists and detailed instructions for how to perform the evaluations.

20 DISTRIBUTION / AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED
22a NAME OF RESPONSIBLE INDIVIDUAL John A. Ellis	22b TELEPHONE (Include Area Code) (619) 225-6434 22c. OFFICE SYMBOL Code 51

DD FORM 1473, 84 MAR 83 APR edition may be used until exhausted
All other editions are obsolete

SECURITY CLASSIFICATION OF THIS PAGE

UNCLASSIFIED

FOREWORD

The Course Evaluation System (CES) was developed as part of the Classroom Instructional Technologies task under the Personnel, Training, and Human Factors Technology (NP2A) Block of the 6.2 Mission Support Technology Program Element 62233. The ultimate goal of the task is to provide guidelines for the classroom of the 1990s. The CES was the result of a data collection effort to determine the current status of Navy classroom training. It is intended for use by Navy Curriculum and Instructional Standards Officers, course managers, senior instructors, educational specialists, and any other personnel involved in training.

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Summary

Problem/Background

The Navy currently teaches over 7000 courses. The great majority of these are presented in traditional classrooms with a group of students being taught by a single instructor. Recent directives by the Chief of Naval Education and Training (CNET) and the Chief of Naval Operations (CNO) indicate that this training format will continue to play a predominant role in Navy education and training. Given this situation, the quality and effectiveness of Navy classroom instruction is an important concern. Recent evaluations of lecture-type instruction in civilian schools have shown that instructional quality is highly variable, non-standard and often poor. Similar problems have been observed in Navy schools. In addition, recent research on learning in civilian schools has shown that in traditional classroom settings, variables affecting student achievement can be effectively controlled. Yet, there have been no systematic attempts to explore the applicability of controlling these or other potentially useful variables in Navy classroom training.

Overview

In the face of increasing pressures on the training system to increase its efficiency and effectiveness, the improvement of Navy classroom training is an important issue. This report presents the Course Evaluation System (CES), which is a prescriptive methodology for evaluating the quality of classroom training.

Purpose

The (CES) gives course managers and instructors the capability to pinpoint problems in ineffective courses and make effective revisions. This will result in more efficient and effective training.

The CES is based on the principles of systematic instructional development and on empirical work demonstrating effective instructional strategies and environments. The CES methodology has been validated in a number (see references) of applications. It consists of two major sections, the objective - test item evaluation and the instructional presentation evaluation. Each section contains check lists and detailed instructions for how to perform the evaluations.

Recommendations

CNET is currently developing a Navy-wide policy for overall quality control of training and training management. It is recommended that the Course Evaluation System be incorporated in this policy.

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The Course Evaluation System

Introduction

The Course Evaluation System (CES) is a tool for evaluating the effectiveness and appropriateness of a course or a segment of instruction (for example, a module or lesson) within a course. The procedures were designed to be used by Navy Curriculum and Instructional Standards Officers (CISOs), course managers, senior instructors, educational specialists and any other personnel involved in training. The system focuses on the processes of instruction in the traditional Navy classroom. The Navy currently teaches over 7000 courses. The great majority of these are presented in traditional classrooms and laboratories with a group of students being taught by a single instructor. Recent directives by the Chief of Naval Education and Training (CNET) and the Chief of Naval Operations (CNO) indicate that this training format will continue to play a predominant role in Navy education and training. Given this situation, the quality and effectiveness of Navy classroom instruction is an important concern. Recent evaluations of lecture-type instruction in civilian schools have shown that instructional quality is highly variable, non-standard and often poor. Similar problems have been observed in Navy schools (Ellis, 1985; VanKekerix, Wulfeck, & Montague, 1982). In addition, research on learning has shown that variables affecting student achievement can be effectively controlled. Yet, there have been no systematic attempts to explore the applicability of controlling these or other potentially useful variables in Navy classroom training.

To develop the CES, military and civilian training-related research studies (e.g., Bloom, 1984) were reviewed for those variables which most significantly affect learning. Current Navy classroom evaluation procedures were also reviewed. The CES represents a synthesis of the above information and is based on variables which most affect the quality of Navy training. The basic CES methodology has been empirically validated in a number of research and practical applications (e.g., Ellis, 1985; Montague, Ellis, & Wulfeck, 1983; Stern & Fredericks, 1982). A future report will describe an extensive application of the CES to current Navy classroom training.

The CES gives course managers and instructors the capability to pinpoint problems in ineffective courses and make revisions. It evaluates course quality by assessing the adequacy and consistency of the three primary components of instruction; objectives, test items, and the instructional presentation. There are two evaluation components of the CES: Objective and Test Item Adequacy and Consistency Evaluation and Presentation Evaluation. There are also preliminary steps involving classification of objectives to be evaluated and separating broad objectives into smaller units. The CES user may choose to apply either one or both CES components. An evaluation may involve an entire course or be limited to specific lesson(s) or module(s) that have problems.

For objective and test evaluation, course/lesson/module objectives and test items are examined to determine their adequacy and how well they relate to the tasks the student must perform on the job. The objectives are then matched to related test items to check for consistency by determining if the conditions, action(s), and standard(s) in the objectives match those in the test items.

The presentation evaluation involves reviewing the instructor and student guides and observing the instructor's presentation in the classroom. Both the consistency of the presentation with the objectives and the adequacy of the presentation are evaluated.

Before applying the Course Evaluation System, you must obtain the necessary resource documents. These include the course objectives, a copy of the course tests, instructor guide(s) and student guide(s). Also, you must determine if the entire course is to be evaluated or just specific course segments.

The next two sections discuss who should use the CES and when it should be applied. The rest of this document describes in detail how to use the CES. Appendix A contains a complete CES example so that the reader can see what the completed evaluation forms look like and how they can be used.

Who Should Use the Course Evaluation System

The Course Evaluation System was designed to be used by personnel responsible for course management, course revision, course evaluation, instructor evaluation, and maintenance of instructional quality. In the Navy these people include senior enlisted personnel who are course instructors and managers, CISOs, civilian educational specialists and training specialists, and contractor personnel. This list includes people who are subject matter experts (SMEs) (e.g.,instructors) and people who are not SMEs (e.g.,educational specialists). Because of this, it is important to point out that the CES can only be used if you are an SME or if you have at least one (preferably two or three) SMEs available to assist you in your evaluation. In addition, if you are an SME you should know the basic principles of instruction; that is, you should have at least completed basic instructor training.

When Should the Course Evaluation System Be Applied

As you will see by reading the rest of this document, using the CES to evaluate instruction is a labor intensive process. Applying the CES to an entire 6 week course would be a major undertaking. Therefore, the primary guideline for applying the CES is NOT to apply it if a course does not have serious problems. There are a number of indicators that a course may be in trouble. These include but are not limited to the following:

- Poor CNET Level II Feedback
- High Attrition
- Fleet Feedback - Atlantic and Pacific Training Assessment Programs
- Student Comments
- Student Performance on Lesson/Module/Course Tests
- Instructor Review/Comments
- Number of Setbacks

If one or more of these indicators point to a problem, the people responsible for the course should consider applying the CES to the problem area(s).

Classifying Objectives

In order to use the CES, the evaluator must know how to classify objectives and how to separate broad objectives into smaller more meaningful, measurable and relevant objectives. Background information on these topics is available in NPRDC SR 79-24, The Instructional Quality Inventory, II. User's Manual Ellis, Wulfeck, & Fredericks, 1979) and in NPRDC SR 83-2, Handbook for Testing in Navy Schools (Ellis & Wulfeck, 1982) . However, enough guidance is provided in this section to enable accurate classification of objectives.

There are five different types of objectives. The types are based on the types of tasks performed on the job. Note that the word "task" is used in a generic sense. A task can be as broad or narrow as needed to accurately capture the job requirements. In addition, a task can involve remembering and reporting information as well as physically doing something. Tasks are not limited to the narrower "job," "duty," and "task" definitional hierarchy seen in some instructional development models. The five types of tasks are:

Remember (R)

Use-Unaided Transfer (UUT)

Use-Unaided No-Transfer (UUN)

Use-Aided Transfer (UAT)

Use-Aided No-Transfer (UAN)

Classifying objectives into one of the five types is a three step process.

Step 1: Determine if the student is to Remember or Use the information. A student can either Remember information or Use the information to do something. This distinction corresponds to the difference between knowledge and application. The following two objectives illustrate the Remember-Use distinction.

Remember: The student will draw the symbol for resistor.

Use: The student will set up a Simpson 260-5p multimeter for measuring resistance.

These two objectives differ with respect to what the student is supposed to do. In the first item, the student has to Remember something. In the second, he has to apply or Use his knowledge. The Remember-Use distinction is usually a simple one. The determination can usually be made by looking at the action in the objective or test item. Typical action verbs are listed in Figure 1. The ones on the left usually indicate Remember tasks, while the ones on the right usually indicate Use tasks.

Remember	Use	
name	apply	operate
state (from memory)	remove	repair
list (from memory)	analyze	adjust
recall	derive	calibrate
remember	demonstrate	replace
write (from memory)	evaluate	assemble
recognize	solve	disassemble
explain (from memory)	prove	calculate
select	sort	troubleshoot
describe	maintain	load
identify	compute	predict
	determine	unload

Figure 1. Action Verbs

The distinction between the verbs Remember and Use may be a bit tricky when you have an objective like the following:

> Using the manual NA 01-S3AAA, list the location and function of the fuel dump valve.

At first glance it might be tempting to classify this a Remember objective. But on closer examination, what the student is actually required to do is to locate the information in the technical manual and record that information on a piece of paper. What the student must demonstrate is the ability to use the technical manual and therefore, this is a Use objective.

Step 2: If the task is Use, determine if it is Use-Aided or Use-Unaided. If it is Use-Unaided the student has no aids except his own memory. If it is Use-Aided the student has a job aid to perform the task. This can be determined by looking at the "conditions" part of the objective. Anything that replaces the need for memory counts as an aid.

AIDS include:

1. A list of procedure steps from a technical manual or Maintenance Requirements Card (MRC).

2. A formula for solving problems and instructions for using the formula.

3. A statement of a rule or a set of guidelines for troubleshooting and repairing a piece of equipment.

Normal tools, materials, etc., are *NOT* aids.

Step 3: If the task is Use determine whether it is Transfer or No-Transfer.

A No-Transfer objective requires the student to perform a specific procedural task the same way every time. It consists of an ordered sequence of steps designed to accomplish a specific task, which needs to be demonstrated in only one way. There is no requirement that the student transfer or generalize performance to new situations. A good rule of thumb is "if you've seen one you've seen them all" or "if you've done it right once or twice you can do it right under any circumstance" you have a No-Transfer objective.

The following are samples of No-Transfer objectives.

1. Tie a bowline knot within 15 seconds. (Use-Unaided)
2. Destroy classified documents under routine conditions using the outline in OPNAVINST 5510.1. (Use-Aided)
3. Weigh a CO2 fire extinguisher and record its weight in accordance with the furnished MRC. (Use-Aided)

Key verbs that you might see in No-Transfer objectives are listed below.

apply	remove
operate	replace
repair	assemble
adjust	produce
calibrate	destroy

Remember that a No-Transfer objective can be Use-Unaided or Use-Aided. The aid is a list of steps to be performed.

A Transfer objective can also contain a sequence of steps. However, Transfer objectives can be applied in a variety of situations or on a variety of different equipments or objects. In other words, they involve tasks and jobs that are more complicated than no transfer objectives. Instruction for Transfer objectives requires many different examples and practice items so

that as many situations as possible are covered. For Transfer objectives it is not possible to teach every possible situation or example in class. For example, if you wanted to teach 5th graders three digit multiplication, it would not be practical to give them every possible three digit-problem. Instead, students are taught a rule for dealing with the different types of problems. You would then give them problems that represent the different types of possible problems so that they could practice using the rule. Finally, you would test them on new problems to see if they had learned how to apply the rule. To decide if you have a TRANSFER objective you need to determine if students will be required to deal with problems or situations on the job that may not be covered in class.

The following are Transfer objectives.

1. Given video tape recordings of radar scopes displaying jamming, the student will classify the type of jamming used for each display. (Use-Unaided)

2. Given the formula for capacitive reactance, instruction about how to apply it, and the values of frequency and capacitance from a schematic, the student will calculate capacitive reactance. (Use-Aided)

3. The student will solve for total power in a DC parallel circuit. (Use-Unaided)

Notice that Transfer objectives may be Use-Aided or Use-Unaided. The aid is at least a statement of the formula or rule to be applied and should include guidelines for when and how to apply it. Key verbs that you might see in a Transfer objective are given below.

solve	find
derive	translate
prove	program
calculate	add
troubleshoot	subtract

In summary, there are three steps in classifying an objective.

1. Determine if the student is required to Remember or Use.

2. If the task is Use, determine whether it is Use-Aided or Use-Unaided.

3. If the task is Use, determine whether it is Transfer or No Transfer.

Objectives should be classified before evaluating objective- test consistency and adequacy (see page xxx). To classify objectives use the form in Appendix B. Columns A and B on this form have space for the objective number and the type of objective, respectively. Note that when objective- test consistency and adequacy are evaluated you will need to fill out a new form. This is because there is often more than one test item associated with an objective (see step 8 page xxx). If it is desirable to avoid filling out the form twice, the objective type could be written next to each objective in the curriculum outline or the list of the course objectives.

Separating Broad Objectives into Smaller Units

Objectives are generally classified and evaluated in the order they appear in the curriculum outline. However, if an objective contains multiple verbs that cover more than one topic or require more than one action, it should be separated into more detailed objectives which contain only one topic (Remember objectives) or action (Use objectives). This will help pinpoint and correct instructional and testing problems. Three examples that illustrate the most common types of multiple-verb objectives and how to separate them are given below.

EXAMPLE 1

1. When the objective contains both Remember and Use verbs.

Objective 3.0. Identify and demonstrate the proper handcuffing procedures in accordance with (IAW) applicable publications.

This objective is rewritten as two objectives because it is both a Remember and Use-Unaided No-Transfer objective:

3.0.1. Identify the proper handcuffing procedures IAW applicable publications.

3.0.2. Demonstrate the proper handcuffing procedures IAW applicable publications.

EXAMPLE 2

2. When the objective contains two or more Use verbs.

Objective 3.6. Demonstrate the identification, apprehension, handcuffing and search techniques necessary to perform the duties of a Master-At-Arms IAW applicable publications.

Since there are four distinct procedural tasks, the objective is rewritten as four separate objectives:

3.6.1. Demonstrate the Identification Techniques necessary to perform the duties of a Master-At-Arms in accordance with applicable publications.

3.6.2. Demonstrate the Apprehension Techniques . . .

3.6.3. Demonstrate the Handcuffing Techniques . . .

3.6.4. Demonstrate the Search Techniques . . .

EXAMPLE 3

3. When the objective is a Remember objective with more than one topic.

Objective 1.9. Identify commonly abused drugs by:

a. drug classification
b. psychological and physiological effects
c. methods of abuse
d. street terminology
e. odor (cannabis sativa L-marijuana, only)

Since there are five topics, the objective is rewritten as five separate objectives:

1.9.1. Identify commonly abused drugs by drug classification.

1.9.2. Identify commonly abused drugs by psychological and physiological effects.

1.9.3. Identify commonly abused drugs by methods of abuse.

1.9.4. Identify commonly abused drugs by street terminology.

1.9.5. Identify cannabis sativa L (marijuana) by odor.

Note that new objectives are numbered to conform with the numbering system used in the curriculum outline or objective list. This is done to ease tracking or matching the original objectives with those used in this evaluation.

Objective and Test Item Adequacy & Consistency Evaluation

The information in the Objective and Test Evaluation Form (Appendix B) provides a framework that will enable you to:

- Identify course training level
- Classify all course objectives
- Check objective adequacy/appropriateness
- Identify essential course objectives
- Match test items to objectives
- Check test consistency
- Check test adequacy/appropriateness

To complete this form you will need:

1. All objectives related to the part of the course under evaluation.
2. All written test items and all performance checklists/rating scales related to those objectives.
3. Assistance from SME(s) if you are not one yourself.

Objective and test evaluation is a 12 step process. The steps are summarized in "job aid" form in Figure 2. Detailed guidelines for performing each step are provided below.

JOB AID FOR
COMPLETING OBJECTIVE AND TEST EVALUATION FORM

Step 1. Determine Overall Course Training Goal.
Step 2. Enter Objective Number in Column A.
Step 3. Enter Task Type in Column B.
Step 4. If Task Type is Use Determine if a Supporting Objective.
Step 5. Determine if Objective is Essential, Nice-to-Know, or Unnecessary.
Step 6. Identify Objectives with Training Goal Different than Course Training Goal Determined in Step 1.
Step 7. Determine if Objective is Adequate.
Step 8. Enter Test Item Numbers in Column K.
Step 9. Determine if Test Items Matches the Objective.
Step 10. Determine if Test Item is Appropriate.
Step 11. Determine if Test Item is Adequate.
Step 12. For Transfer Objectives Determine if there are Enough Test Items.

Figure 2. Job Aid

Step 1: Determine Overall Course Training Goal.

Think about the overall training goal of the course. What should the graduate know and/or be able to do upon completion of the course? What are the requirements of the job? It is essential to identify the course training goal because it is the driving force in the course. All course objectives should be directly related to the training goal which in turn should be directly related to the requirements of the job. Even courses that are designed to prepare students for follow-on training, such as Basic Electricity and Electronics (BEE), should be directly related to job requirements. If you are evaluating a preparatory type course, treat it as a *portion* of a training program with the training goal related to the ultimate job requirements. In other words, the overall training goal of the BEE course should relate to the job requirements after the student graduates from any follow-on "A" school. If you are not an SME, you should consult with SMEs assigned to the course as manager and/or instructors to determine the training goal. Another aid to determining the course goal is the course mission statement. Most Navy courses have a mission statement. Be careful, however, sometimes the mission statement will go beyond the actual course goal. The three most common training goals are listed below. On the form, enter the most appropriate goal under the course title.

HEAVILY SUPERVISED OJT. The student should be generally familiar with terminology, technical documentation and duties required on the job. The student will have had a minimal amount of hands-on experience for Use objectives. Upon completion of the course, the student will perform most of the job under close supervision. Remember objectives may be tested at the recognition level (multiple choice, true-false, matching) or at the recall level (fill-in, listing, short answer). This will be dependent upon criticality of the objective and cost and safety factors.

MINIMALLY SUPERVISED OJT. The student should receive enough hands-on training so that upon graduation he or she can perform the job with very little supervision. The supervisor will most likely not guide the graduate through the entire job but will be available to answer specific questions. The student will be able to locate and use any relevant technical documentation if the job is use-aided. The student should possess more specific knowledge about job procedures, technical documentation and terminology than at the Heavily Supervised OJT Level. Therefore, Remember objectives are tested at the recall level (fill-in, listing, short answer).

SKILLED PERFORMER. The student should receive enough hands-on training so that upon graduation from the course, he or she can perform the task with no assistance from a supervisor. The graduate is able to supervise/train others performing the task.

Step 2: Enter Objective Number In Column A. Enter only one objective number and then enter information in columns B through Q that corresponds to that objective before entering the next objective number. DO NOT EVALUATE BROAD TERMINAL OBJECTIVES THAT ARE ENTIRELY SUPPORTED BY ENABLING OBJECTIVES. Remember to break up objectives that contain two or more different task types, two or more procedural tasks or more than one topic.

Step 3: Enter Task type Of Objective In Column B. The task types are:

Remember (R)

Use-Unaided Transfer (UUT)

Use-Unaided No-Transfer (UUN)

Use-Aided Transfer (UAT)

Use-Aided No-Transfer (UAN)

Step 4: If This Is A Use Objective, Determine If An Associated Supporting Objective Is Necessary And If Necessary Is Present. In Column C Enter Yes If Necessary and Present, Enter No If Necessary But Not Present, Or Enter UN If Unnecessary. If it is a Use-Unaided objective, a previous Remember objective may be needed. For example, if the task to be performed is complicated, dangerous, or involves transfer there should be a previous Remember objective. However, if student is required to perform a straightforward uncomplicated No-Transfer task, then a previous Remember objective is probably unnecessary. The reason for this is that the student's memory for how to perform the task can be inferred from observing performance of the task in a hands-on laboratory exercises. To determine whether or not a previous Remember objective is required consult with your SME. If one is not required put "UN" in Column C.

If the task is Use-Aided a previous remember objective would be required if the Aid were complicated, contained unfamiliar terminology, or had other characteristics that required students to have to remember information about it.

Step 5: Review All Course Objectives And Determine The Following:

5a: Is the objective ESSENTIAL (necessary for the job the students are being trained for)? If the objective is essential, check Column D.

5b: Is the objective NICE TO KNOW (motivational or related information that is not essential for job performance)? If the objective is nice-to-know, check Column E.

5c: Is the objective UNNECESSARY (unrelated and not needed for job performance)? If the objective is unnecessary, check Column F.

Step 6: Identify Objectives That Have A Training Goal Different From The Overall Course Training Goal. In Step 1, you identified the overall training goal for the course. Is the training goal different for any of the specific essential objectives. If it is, enter the training goal number (1 - 3) in Column G where:

1 = Heavily Supervised OJT

2 = Minimally Supervised OJT

3 = Skilled Performer

Step 7: Determine If The Objective Is Adequate. The conditions, standards and action must be appropriate for the work to be performed on the job or in later training. Keep in mind the course training goal and remember the job or later training requirements when determining if the objective is appropriate. If a condition, standard, or action is not contained in an objective, enter "N" (for NO) in the appropriate column. However, some objectives will contain "implicit" Conditions or Standards, like "Given paper and pencil, ..." or "with 100% accuracy" and these can be evaluated for appropriateness.

7a: Are the CONDITIONS appropriate? Enter "Y" (for Yes) or "N" (for NO) in Column H. Are the conditions typical of those found on the job? The conditions may not be typical of the job but still be appropriate if they relate to the course training goal. For example, suppose the objective is Use- Aided but there is no similar aid on the job. If the training goal is Heavily Supervised OJT, it may be appropriate to have an aid while training even though there is no aid on the job. For Use-Unaided objectives, are there any aids on the job? If there are job aids but the students do not have similar aids during training, the conditions are probably not appropriate.

7b: Are the STANDARDS appropriate for the work to be performed on the job? Is the time limit, accuracy requirement, etc. appropriate for the job and the course training goal? Enter "Y" or "N" in Column I.

7c: Is the ACTION appropriate for the work to be performed on the job? Is it the action the student will perform on the job? ENTER "Y" OR "N" in Column J.

Step 8: Enter The Test Item Numbers For All Items Associated With The Objective In Column K. Obtain a copy of the tests so they can be matched on the Objective and Test Review Form (Appendix B). If there are multiple or alternative versions of the written tests it is only necessary to test one version if the tests involve only minor variations, such as the rearrangement of test items within the test versions. If you have more than one test version that contain different questions (not just sequenced differently), match the test questions from all test versions to appropriate objectives. In other words, treat separate versions and daily quizzes as one big test to be matched with objectives.

Enter only one test item number on each line in column K. Continue entering vertically down the form until you have listed all test item numbers after their associated objective. If several test items are found for a given objective will require a separate line on the form. For this reason it is important to complete all the columns for an objective before moving to the next objective. Columns A and K will then match up correctly. For any objective that is not tested put "NT" in Column K.

For use objectives that require hands on performance find out if there is an associated Lab Exercise. If there is a lab enter LX in Column K to indicate that there is a lab exercise for the objective. For courses at the Heavily Supervised OJT training level the lab exercise can serve as both practice and test item; therefore, do not count a test item as missing if the lab exercise in Heavily Supervised OJT course does not look like a formal test. If there is no lab and the objective requires that there be one put "NT" in Column K. Finally, some test items may not relate to a course objective. Enter those test items in Column K at the end of the checklist and, in Column A enter N.O. to indicate that there is no objective associated with the test item.

Step 9: Determine Whether Or Not The Test Item Matches The Objective. Rating Scales/Performance Checklists should also be evaluated as test items. If a Lab Exercise has no associated checklist/rating scale, leave COLUMNS L through N blank.

9a: Do the CONDITIONS under which the test item is administered match the conditions in the objective? Are the "Givens" the same? in the objective? Enter "Y" or "N" in Column L.

9b: Does the STANDARD for scoring the test item match the standard in the objective? Enter "Y" or "N" in Column M.

9c: Does the ACTION in the test item match the action in the objective? Enter "Y" or "N" in Column N.

Appendix A provides an example of this process. For further examples see the Instructional Quality Inventory, II: Users Manual (Ellis, Wulfeck, & Fredericks, 1979).

Step 10: Determine Whether The Test Item Is Appropriate For The Training Goal Of The Objective. Enter "Y" Or "N" In Column O. In Step 8, you matched test conditions, standards, and actions to the objective. It is possible that the test item and objective match perfectly but the test item may not be appropriate because the objective was not appropriate for the job or training goal. (Of course any test item that failed to match in Step 8 is by definition not appropriate and therefore gets a "N" in Column O.) For example, suppose a test item is multiple choice and Minimally Supervised OJT was identified as the training goal for the course. The multiple choice test item is not appropriate because Minimally Supervised OJT requires constructed response type test items (short answer, fill-in, listing) for Remember objectives (see Figure

3). But it is important to note that even at the Heavily Supervised OJT level, it may not be appropriate to test a Remember objective with a selected response test (multiple choice, true-false, matching). It may be imperative that the student memorize the material. This is often the case when personnel or equipment safety is at stake. In those cases, you want to make certain that the student can recall the information and not merely recognize the correct answer. Consult with an SME to determine the criticality of the objective before deciding if the test item is appropriate. In general, standards should become harder and conditions more typical of the job, as you move to a higher training goal. For example, for performance tests there should be longer time limits, more errors allowed, and more aids for Heavily Supervised OJT than for Minimally Supervised OJT and Skilled Performer. For Skilled Performer, the student may be required to perform the task several times without any errors and without the assistance of a training aid.

If the objective is identified as unnecessary in Step 5, any associated test items should be considered inappropriate. An unnecessary objective should not be included in the course. For an objective that is nice-to-know, associated test items should be considered inappropriate if the objective is included in the course only to motivate students. However, if an objective is nice-to-know because it relates to some future job requirements (as opposed to immediate requirements), associated test items may be considered appropriate.

If there is a lab exercise (LX entered in Column K) with no associated rating scale/checklist, you can not evaluate the appropriateness of the lab exercise. Leave Column O blank. Figure 3 on the following page should help determine test item appropriateness.

TRAINING GOAL	TEST ITEM TYPE
Heavily Supervised	Perform only once with several errors allowed. If aided, aid must be provided. Remember objectives may be tested with either constructed or selected response items based on SME criticality rating.
Minimally Supervised	Perform task a few times with fewer errors allowed. If aided, aid must be provided. Remember objectives must be tested with constructed response items.
Skilled Performer	Perform task several times with no errors allowed. Same as minimally supervised for aided and unaided objectives.

Figure 3. Test Item Format Determination

Step 11: Determine Whether The Test Item Is Adequate. Enter Yes Or No In Column P. (If the item failed to match the objective in Step 8 it is not adequate and "N" should be put in Column P.) Use the following criteria:

11a: Is the test item CLEAR?

11b: Is the test item UNAMBIGUOUS?

11c: Is the test item WELL CONSTRUCTED?

11d: Is the test item FREE OF HINTS?

11e: Does the test item allow for COMMON ERRORS to be made?

11f: For Use tasks, is the Rating Scale/Checklist well constructed? Are there enough items to test the performance? Are the instructions clear? If there is no associated Rating Scale/Checklist for a Lab Exercise (LX), enter "N" in Column P.

For specific details on how to apply these criteria along with explained examples see the Handbook for Testing in Navy Schools (NPRDC Spec. Rep. 83-2) Navy Personnel Research and Development Center, San Diego, (Ellis & Wulfeck, 1982).

Step 12: For Use-Unaided and Use-Aided Transfer Objectives, Determine If There Are Enough Test Items. Enter "Y" Or "N" In Column Q. If the objective is not a Transfer objective enter N/A in Column Q. Developing tests for objectives that require transfer is different than developing

tests for objectives that do not. A No-Transfer objective defines only one or a small number of possible test items, and these items are "seen before" during training. For example, if an objective requires the student to recall the names of the parts of a piece of equipment, the only way to test this is to ask the student to recall the names of the parts, and the student will have practiced recalling these names during training. Similarly, if an objective requires the student to perform a procedure on a piece of equipment, the test will require the student to perform the procedure, and the student will have practiced this performance during training.

A Transfer objective defines a large (or even infinite) number of test items. Only some of these can be practiced during training, and only some can be given on tests. For example, if an objective requires the student to use a rule that applies to a large or infinite number of problems, some of these will be used as examples or practice items during instruction, and others will appear on tests. There will still be many problems that could have been tested and that the student is supposed to be able to solve. Since not all test items from this large or even infinite number can be administered, you need to decide how many test items you should give to the student. The student should be given test items that represent the various types of problems and there should be enough test items so that the score the student gets on the test accurately represents the score the student would get on a test containing all the possible test items (if it were possible to construct such a test).

Again, for more information on how to accomplish this step and testing in general, see the *Handbook For Testing in Navy Schools,* (Ellis & Wulfeck, 1982). Finally, see Appendix A for an example of a completed Objective and Test Evaluation Form.

Presentation Evaluation

This evaluation is conducted while observing the instructor in the classroom and uses the forms in Appendices C, D, and E. Determine if you want to observe the entire course or a segment of the course. Identify and classify the objectives associated with the segment(s) prior to the observation. Remember to separate broad objectives into smaller units. If the objective and test evaluation has been conducted, the objective numbers should match the numbers assigned on that form (Appendix B). Obtain copies of all related instructor and student guides as you will evaluate the presentation and the guides together.

The three forms completed during the presentation evaluation are:

1) Presentation Consistency Form, Appendix C
2) Presentation Adequacy Form, Appendix D
3) Instructional Effectiveness Checklist, Appendix E

If the presentation is *consistent* it will contain the right combination of presentation parts or components that are required for that particular type of objective. If the presentation is *adequate* it will incorporate a number of instructional design principles which promote student learning. The Instructional Effectiveness Checklist contains a series of yes/no questions that relate to presentation effectiveness.

Presentation Consistency (Appendix C)

For a presentation to be consistent with an objective, it must teach to the task type of that objective and contain the right combination of presentation components. That is, different types of presentation components are required for different types of tasks. The five main presentation components are:

1. STATEMENT. Presents essential information needed by student to master the objective.

> FOR EXAMPLE, a statement for a Remember objective that requires the student to know the part names of a lathe could involve the instructor naming the parts on a diagram or the actual equipment in front of the class. It could also be a labeled diagram in the student guide that the instructor tells the student to study. For an objective that requires the student to know the steps for preparing an unclassified message for transmittal, the instructor could orally state or visually present (on a chalkboard, viewgraph, or slide, for example) each step to the class.

2. PRACTICE REMEMBERING. Provides an opportunity for the student to test her or his ability by recalling or recognizing specific information presented in the statement.

FOR EXAMPLE, the instructor could orally quiz students about the parts of a lathe or the steps for transmitting a message during the presentation, or could administer written practice during class, or could refer students to practice questions in the student guide to be done as homework.

3. EXAMPLE. A demonstration of the task is performed.

FOR EXAMPLE, the instructor could physically demonstrate how to operate a lathe or how to transmit a message in front of the students either in the classroom or the laboratory, or students could view slides, a movie, a videotape, a videodisc, etc. showing how to do the task.

4. PRACTICE USING. The student is given an opportunity to perform the task.

FOR EXAMPLE, the student could be given a project to complete during which he or she would operate a lathe or transmit a message. For tasks in which cost and safety need to be considered simulators could/should be used to provide practice using.

5. FEEDBACK. For practice remembering the student should be given feedback about the correctness of his or her answer. For practice using the student should be given feedback about the quality of his or her performance.

FOR EXAMPLE, for practice remembering information such as lathe part names or steps for message transmittal that occurs in the classroom or is done as homework, the instructor should review each question and provide the correct answer. For practice using in the classroom or laboratory the instructor should either give oral feedback or a written evaluation to the student.

Again, different combinations of these components are required depending on the task type of the objective. Figure 4 shows which components are required for each task type.

	Required Presentation Components			
Task Type	Statement	Practice Remembering w/Feedback	Examples	Practice Using w/Feedback
Remember	Required	Required	Not Required	Not Required
Use-Unaided No Transfer	Required if no recent remember objective	Required if no recent remember objective	Required	Required
Use Aided No Transfer	Aid replaces statement	Not Required	Required with aid	Required with aid
Use-Unaided Transfer	Required if no recent remember objective	Required if no recent remember objective	Required with variety of examples	Required with variety of practice problems
Use-Aided Transfer	Aid replaces Statement	Not Required	Required with variety of examples and aid	Required with variety of problems and aid

Figure 4. Presentation Components

The Presentation Consistency Form, Appendix C, is designed to record the presence and completeness of required presentation components. When considering whether a component is present and complete, evaluate the instructor's presentation in the classroom in conjunction with the instructor and student guides. The instructor guide is evaluated to check (1) if it is consistent with the objectives, (2) if it is consistent, is the instructor using it correctly, and (3) if it is not consistent, is the instructor correcting the deficiency in his/her presentation. The student guide is evaluated because it frequently contains practice exercises that students are required to do as homework. These exercises need to be evaluated to see if they meet the "practice and feedback component" requirements. If they do, mark practice remembering and feedback as present and complete. Also, for courses at the Heavily Supervised OJT training level a lab exercise can serve as both practice and a test. In this instance, do not count practice as missing if the lab exercise is only done once.

Prior to classroom observation, complete the following steps:

1. Enter objective numbers on the first line of the Presentation Consistency Form (Appendix C). (Eight objectives may be evaluated on each form). The objective numbers should match the numbers assigned on the Objective & Test Evaluation Form (Appendix B). Remember that objectives with multiple verbs may need to be rewritten so that they contain only one topic (Remember objectives) or action (Use objectives).
2. Determine the task type of each objective.
3. For each objective, put an "X" in the presentation component blocks that are not required for the objective task type.

During classroom observation or during instructor and student guide evaluation, indicate the presence and completeness of each presentation component by writing in one of the following letters in each block:

C = component COMPLETE
I = component INCOMPLETE
N = component NOT PRESENT

See Appendix A for an example of a completed Presentation Consistency form or Appendix C for a blank copy of the form.

Presentation Adequacy (Appendix D)

The presentation may include the right combination of presentation components and still not communicate to the student because (1) the contents are jumbled together in such a way that it is difficult to distinguish one component from another or (2) the subject matter requires supporting information or additional explanation to answer student questions. Presentation Adequacy concerns the organization and format of materials and the communication of supporting information where needed by the student.

The Presentation Adequacy Form (Appendix D)is designed to record the adequacy of each presentation component with regard to the following criteria:

1. SEPARATED (Sep). Is the component separated from the rest of instruction?

   FOR EXAMPLE, does the instructor pause before introducing the new component, put it on the blackboard, or display it with a viewgraph or slide?

2. IDENTIFIED (Iden). Is the component identified so students know what it is?

   FOR EXAMPLE, does the instructor state orally that he or she is giving an example or a definition? If the practice is in the student guide, is it labeled?

3. CLEARLY STATED (Clear). Is the component clearly stated so that the student can understand it?

FOR EXAMPLE, can students understand the terminology used? Is the presentation unambiguous and not confusing?

4. HELPS. Does the component contain something to help the student better understand?

FOR EXAMPLE, is there a memory aid, demonstration of each step, highlight of critical characteristics, etc? Does the instructor explain new information by relating it to something the student already knows?

5. JOB ORIENTED (Job). Is component oriented toward job performance?

THAT IS, is the student told how what is being taught is required for competent job performance? Is the component presented in the context of the job?

6. ENOUGH. Is there enough practice or enough examples?

FOR EXAMPLE, for Transfer tasks there need to be enough practice items and examples so that students can perform in situations that they have not encountered during training. For No-Transfer tasks they need to have enough practice to perform at the course training goal. (See the Handbook for Testing in Navy Schools, Ellis & Wulfeck, 1982, for more details and examples.)

7. COMMON ERRORS (Errors). Do practice and feedback allow for errors commonly made on the job? Do examples show why common errors are wrong?

FOR EXAMPLE, on the job are safety precautions easily ignored, or are important steps frequently left out?

8. EASY TO HARD (E-H). Is practice easy to hard when appropriate? Are early examples simplified for complex tasks?

FOR EXAMPLE, if the task was to field strip an M-16 rifle in the dark it would not be appropriate to begin training in the dark.

9. STUDENT INVOLVEMENT (Invl). Does the instructor encourage student involvement?

FOR EXAMPLE, during the presentation, does the instructor ask the students to supply the definition, steps of procedure, etc from the student guide or from memory? During a demonstration, does the instructor call on students to give steps of procedure, predictions, etc? Does the instructor pass around a piece of equipment during the lecture or demonstration?

Note that not all criteria apply to each component and therefore certain blocks on the form have been X'd out. See Appendix A for an example of a completed Presentation Adequacy Form.

Prior to classroom observation complete the following steps:

1. Enter the objective number on each form. Only one objective is evaluated on each form. The objective numbers should match the numbers used on the Presentation Consistency Form (Appendix C).
2. Put an "X" in the boxes for all presentation components not required by objective task type. Refer back to the Presentation Consistency Form and X out the same presentation components.

During classroom observation, indicate whether each criterion is met by writing in one of the following letters in each block:

Y = criterion met
N = criterion not met
NA = Not appropriate for particular type of task

Remember that some components may be contained in the student guide and should also be rated for adequacy.

Instructional Effectiveness Checklist (Appendix E)

The Instructional Effectiveness Checklist (Appendix E) is designed to record classroom activities and conditions that affect student learning and motivation. The form is straight-forward; simply check the appropriate column or record the requested information in the identified block.

Final Word

Since applying the CES requires a lot of work, the CES should be used only on courses or portions of courses with serious problems. If there are problems, the CES is extremely effective in detecting and correcting deficiencies. In a recent application of a prototype of the CES, academic attrition was reduced by over 50 percent (Ellis, 1985). The CES is specifically designed to detect the following:

Inconsistencies among objectives, test items, and presentation (which includes classroom presentation and the instructor and student guides);

Inadequate objectives, test items, and presentation;

Ineffective presentation including laboratory exercises;

Objectives and test items that are not consistent with the overall course goals;

Objectives that are not tested;

Test items that are not associated with objectives;

Objectives (and any associated test items) that are nice-to-know or unnecessary.

If in reviewing your course, module, or lesson you find any of these problems you should work with the course SMEs (if you are not one yourself) to correct them. Remember, the primary goal of the CES is to ensure that classroom instruction is adequately presented and is consistent with the requirements of the job the students will be performing when they graduate from the course.

Recommendations

The Chief of Naval Education and Training is currently developing a Navy wide policy for overall quality control of training and training management. It is recommended that the Course Evaluation System be incorporated in this policy.

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Appendix A

THE COURSE EVALUATION SYSTEM: A WORKED EXAMPLE

This appendix provides a worked example of a course evaluation using the Course Evaluation System (CES). The course used in this example is the Master-At-Arms (Afloat) Indoctrination, K-830-2122, which was taught at the Fleet Training Center, San Diego, CA. This course is intended to provide basic Naval Law Enforcement Training for officers and petty officers. The students are taught the technical knowledge and physical skills required to perform basic Master-at-Arms duties. The course lasts 5 days and consists of both classroom and laboratory instruction.

The portion of the course evaluated in this example is Lesson Topic 3.1 - Use and Application of the Police Baton. The topic consists of three enabling objectives that require 0.5 hours of classroom presentation and 1.5 hours of laboratory exercise.

This example is divided into four sections. The first three sections are Objective Classification (including separating broad objectives into smaller units), Objective and Test Adequacy and Consistency Evaluation, and Presentation Evaluation. These sections are based on the the three major evaluation tasks of the CES. The fourth and final section lists the course revisions that need to be made based on the CES findings. Figures 1 through 6 (beginning on page A-8) are the completed CES forms for this course.

Objective Classification

Figure 1 is the lesson topic page taken from the course curriculum outline. Note that it shows terminal objective 3.0 which is partially support by this lesson topic and the three enabling objectives which are supported entirely by this lesson topic. The first thing to do in the CES is to classify the enabling objectives.

Objective 3.1.

Step 1. Is the student required to Remember or Use? The verb in this objective is "demonstrate" which is a Use action verb. (See CES page 2).

Step 2. If Use, is it Use-Unaided or Use-Aided. The objective does not indicate that the student will be given diagrams or instructions to look at while demonstrating the movements; therefore it is Use-Unaided. (See CES page 3).

Step 3. Does the objective require Transfer or No-Transfer. The phrase "basic movements of the Koga Method of Police Baton Utilization" indicates that this task is procedural and is performed in a standard manner. Therefore, this objective is Use-Unaided No-Transfer (UUN). (See CES pages 3-5).

Objective 3.2

Step 1. The verb in this objective is also "demonstrate," so it is a Use objective.

Step 2. Again, no aids are indicated, so it is Use-Unaided.

Step 3. Again, this is a procedural task performed in a standard manner, so the objective is Use-Unaided No Transfer (UUN).

Objective 3.3

Step 1. The verb in this objective is "identify," which is a Remember verb. Therefore, this objective is Remember (R) and Steps 2 and 3 do not have to be done.

Note that none of these objectives involve multiple actions or topics and, therefore, do not have to separated into smaller units.

Objective and Test Adequacy & Consistency Evaluation

For this evaluation, you need to get the test items that go with the objectives. You also need the Objective and Test Review form, which is Appendix B. Finally, if you are not a subject matter expert (SME), you need to have one (preferrably two or three) available as you complete the form. (See CES page 8 for additional explanation).

The test items you need (taken from the course final exam) are shown in Figure 2. Figure 3 is a completed Objective and Test Review form for objectives 3.1, 3.2, and 3.3. To complete this form, we consulted with the course manager and two of the course instructors. They provided the necessary subject matter expertise. The methods we used for completing each column of the form are discussed below.

Step 1. Determine Training Goal.

For this step we consulted the course manager and an instructor and found that the training goal was Heavily Supervised On the Job Training. We entered this information on the line provided below the course title on the left hand side of the form. (See Figure 3).

Step 2. Enter Objective Number in Column A.

This is routine. We copied the objective numbers from the curriculum outline to the form in Column A. (See Figure 3).

Step 3. Enter Task Type in Column B.

For each objective, we entered in Column B the task type that we determined in the Objective Classification phase.

Step 4. If Use Objective, is there a Supporting Objective.

Objectives 3.1 and 3.2 are Use objectives and there is no supporting Remember objectives. In this case, however, this is not really a problem because the training goal is heavily supervised OJT and the task is not complicated or dangerous. Therefore, knowledge of how to perform the task can be evaluated by observing the students perform it, so you don't need a separate Remember objective. We put "UN" (for unnecessary) in Column C (Figure 3).

Step 5. Determine if Objectives are Essential, Nice-To-Know, or Unnecessary.

We consulted our SMEs who told us that all three objectives were essential for job performance. Therefore, we put a check in Column D (Figure 3) for each objective.

Step 6. Identify Objectives with Different Training Goals.

According to our SMEs, none of the three enabling objectives had a different training goal, so, we left Column G (Figure 3) blank.

Step 7. Determine if the Objective is Adequate.

We asked our SMEs if the conditions, standards, and action for each of the objectives were appropriate for the job and they told us that everything was appropriate for objectives 3.1 and 3.2 so, for these objectives, we put Yes in Columns H, I, and J (Figure 3).

Objective 3.3 did not have appropriate conditions, action, and standards because the objective involved knowing information critical for personal safety; that is where not to strike on the body with a baton. Therefore, we put No in Columns H, I and J (Figure 3).

Step 8. Enter Test Item Number.

For objectives 3.1 and 3.2 we entered LX in Column K (Figure 3) because the curriculum outline and the SMEs indicated that there was a laboratory exercise (LX) for these objectives. For objective 3.3, we identified items 46 and 47 from Figure 2 as possibly testing the objective. We entered these numbers on separate lines in two different boxes in Column K (Figure 3).

Step 9. Determine if Test Items Match the Objective

For objectives 3.1 and 3.2, we had to leave Columns L through N (Figure 3) blank because there were no checklists/rating scales for the lab exercises. The evaluation of student performance was left up to the instructor's personal

judgement. This situation can lead to serious problems. For example, different instructors may evaluate the same student differently because they have different ideas about what is correct. In addition, a new instructor may be confused or have insufficient knowledge to accurately evaluate performance. We recommended that written checklists/rating scales be developed for objectives 3.1 and 3.2.

For objective 3.3, we tried to match the conditions, standards, and actions in test items 46 and 47 (see Figure 2) with those in the objective. For item 46, the conditions match (implied paper and pencil) and the standard matches (70 percent to pass the final exam), however; the action in the objective, "identify the non striking areas," does not match the action in item 46, which is to identify what "you may remove from the suspect." Therefore, we put a Y in Columns L and M and an N in Column N.

For item 47, the conditions, action, and standard all match because the subject is asked to identify "the three areas of the human body the Master-at-Arms will not strike." So, we put a Y in Columns L, M, and N.

Step 10. Does Test Item Match Training Goal?

For the lab exercises associated with objective 3.1 and 3.2, we had to leave Column O blank because there were no written checklists/rating scales. Item 46 did not match objective 3.3, therefore it can not be appropriate, so we put "no" in Column O. Item 47 did match and, because the course is Heavily Supervised OJT multiple choice items may be appropriate, however, in this case we checked with our SME because the item seemed to involve health and safety (that is, knowing which areas of the body not to strike). Our SME told us that the information covered by the item was critical and should be memorized, so multiple choice is not appropriate and we put an "N" in Column O for item 47.

Step 11. Is the Test Item Adequate?

Using the criteria in the CES we determined that the test item 47 was not adequate, and we put N in Column P. There were no written checklists/rating scales for objectives 3.1 and 3.2, and item 46 did not match, so for these items we put N in Column P.

Step 12. For Transfer Objectives Are There Enough Test Items?

None of the objectives reviewed were transfer objective so we put N/A in Column Q.

Presentation Evaluation

In this section, the presentation will be evaluated for consistency with the objectives and test items and for adequacy. The instructor and the classroom environment will also be evaluated.

Presentation Consistency

Presentation consistency is evaluated using the Presentation Consistency Form from Appendix C. To complete the form you need to collect copies of the instructor and student guides associated with the objectives, and then you need to sit in on the instructional presentation, both lecture and lab. The first step is to enter the objective numbers on the first line of the form (Figure 4, there is room for eight objectives). The next step is to determine what instructional components are required based on the Task Type of each objective. Then the components that are not required are Xed out on the form. In the present example the Task Type for objectives 3.1 and 3.2 is Use-Unaided No-Transfer, therefore all four presentation components are required. The task type for objective 3.3 is Remember, so only a statement and practice remembering with feedback are required. We Xed out the remaining components on the form (see Figure 4).

After reviewing the instructor and student guides and observing the presentation (including the laboratory), we found that all the components for all three objectives were present and complete with the exception of the feedback for objectives 3.1 and 3.2. There was very little time devoted to feedback about performance in the laboratory exercise. Note that for objectives 3.1 and 3.2 we assumed that practice remembering was tested by observing students perform the procedure during the lab exercise. On the Presentation Consistency Form (Figure 4) we put C in all boxes except the feedback boxes for objective 3.1 and 3.2, in these boxes we put I See Figure 4 for the completed form.

Presentation Adequacy

To evaluate presentation adequacy, you need to get the Presentation Adequacy Form (Appendix D), the student guide, and observe the instructional presentation, both lecture and lab. First, we Xed out the boxes on the Presentation Adequacy Form (Figure 5) that are not required for each of the three objectives. Then we evaluated each objective on the applicable adequacy criteria and put Ys and Ns in the appropriate boxes on the Presentation Adequacy Form (see Figure 5). Figure 5 shows that for all three objectives the instructor (and/or the student guide--a part of the overall presentation) did not separate or identify the basic presentation statements, the feedback (objectives 3.1 and 3.2 only), and the examples. The practice using was separated and identified because it was performed separately as a laboratory exercise. For example, for objective 3.1, the steps of the Koga procedure were given along with a lot of nice-to-know anecdotal information. The steps were not listed separately

on the blackboard or viewgraph nor were they identified as "step 1, step 2, etc." The practice remembering and feedback for objective 3.3 were separated from the other instructional components, were identified and clear, but the practice remembering for objectives 3.1 and 3.2 was not. Despite these problems, the statements, examples, and practice using for objectives 3.1 and 3.2 were clearly presented (column 3). The feedback for these objectives, as noted in the consistency evaluation (Figure 4), was incomplete, unclear, and not separated and identified. Finally, there were generally, too few "helps" but the instruction was job oriented and the instructor did encourage student involvement. In conclusion, presentation adequacy in this course could be significantly improved. If this is done, it would enhance student learning and retention.

Instructional Effectiveness Evaluation

To evaluate the instructional process, you need to complete the Instructional Effectiveness Checklist, Appendix E, while you are observing the classroom and/or laboratory instruction. Figure 6 shows the completed form for the classroom observation for the Master-at-Arms course. We used a different copy of the checklist for classroom and laboratory instruction because the types of activities were different. (Only the classroom form is shown in Figure 6). Be sure to label the laboratory checklists as such for easy identification.

The majority of checks on Figure 6 (Appendix E) are favorable. Some exceptions are that the instructor did not urge the students to take notes nor did he give the students time to take notes. Also the instructor tried to teach the class without any overhead transparencies nor other aids demonstrating the proper way to use the baton. We noted that this aspect of the instruction could be improved.

Evaluation Summary

1. Course objectives 3.1 and 3.2 are well written and essential. They all have appropriate actions, conditions and standards.

2. Objective 3.3 and test item 47 did not have an action or conditions and standards that were appropriate for the job requirements. In addition, test item 46 did not match the objective. The performance tests for objectives 3.1 and 3.2 did not have checklists/rating scales and were inadequate because there was too little feedback and individual supervision during the the laboratory exercise.

3. Objectives 3.1, 3.2 and 3.3 were adequately introduced to the students. To little time seemed to be devoted to practice with the Use objectives. The instructor provided a number of job oriented examples for all objectives.

4. Presentation Adequacy evaluation shows that instructional components were not separated or identified. It also shows that the instructor was clear and job oriented and involved the students in the presentation.

5. The Instructional Effectiveness Checklist indicates that the students were not encouraged, nor allowed enough time, to take notes.

6. Given the number of students in the laboratory and the procedural nature of the tasks, using a baton, films or videotapes showing the correct procedure would have been appropriate. No visual aids were used by the instructor; demonstration alone was used to show the correct procedure.

Course Revisions

1. Test item 46 should be eliminated or rewritten.

2. The action (identify), standards (70 percent) and conditions (multiple choice) for objective 3.3 and test item 47 should be changed so that the item is constructed response (e.g., listing) with 100 percent accuracy.

3. Checklists/rating scales should be developed for objective 3.1 and 3.2.

4. Additional laboratory time should be allotted to provide students with increased feedback about their performance.

5. Audio-visual aids should be developed to illustrate the procedural objectives.

6. Students should be instructed to take notes.

7. The instructor guide should be revised so that the different components of the instruction will be separated and identified by the instructor.

FIGURE 1

LESSON TOPIC 3.1 USE AND APPLICATION OF THE POLICE BATON

Contact Hours Allotted this Lesson Topic:

Classroom	Laboratory
0.5 Hours	2.5 Hours

TERMINAL OBJECTIVE:

Supported Entirely by this Lesson Topic: NONE

Supported Partially by this Lesson Topic and Partially by Lesson Topics 3.2 and 3.3:

When students complete this course, they will be able to:

3.0 IDENTIFY and DEMONSTRATE the proper use of physical restraint, self defense, apprehension, handcuffing and search techniques while applying the concept of Minimum Force in accordance with applicable publications.

ENABLING OBJECTIVES:

Supported Entirely by this Lesson Topic:

When students complete this course, they will be able to:

3.1 Given a standard police baton and following the correct steps of procedure, DEMONSTRATE the basic movements of The Koga Method of Police Baton Utilization in accordance with applicable publications.

3.2 DEMONSTRATE the correct striking areas of the human body in relationship to the use of the standard police baton and the levels of force pertaining to each striking area in accordance with applicable publications.

3.3 IDENTIFY the non striking areas of the human body in relationship to the use of the standard police baton as specified in applicable publications. A score of 70% must be attained on a final written comprehensive test.

FIGURE 2

5854.01-02

41. HOW IS COCAINE NORMALLY ADMINISTERED?

A. SNIFFED
B. INJECTED
C. EATEN
D. BOTH A AND C

42. MARIJUANA DEPENDENCE, IF ANY, IS CLASSIFIED AS?

A. REGULAR USE LEADS TO MENTAL DEPENDENCE ONLY
B. REGULAR USE LEADS TO PHYSICAL DEPENDENCE ONLY
C. REGARDLESS OF AMOUNT OF USE, NO DEPENDENCE IS DEVELOPED
D. CHRONIC USERS RISK BODY TOLERANCE LEADING TO PHYSICAL DEPENDENCE IN ADDITION TO MENTAL DEPENDENCE.

43. THE GROUP OF DRUGS OBTAINED FROM THE POPPY PLANT ARE CLASSIFIED AS?

A. HALLUCINOGENS
B. STIMULANTS
C. DEPRESSANTS
D. NONE OF THE ABOVE

44. WHAT COURT-MARTIAL CAN AWARD THE GREATEST PUNISHMENT?

A. CAPTAIN'S MAST
B. SPECIAL COURT-MARTIAL
C. SUMMARY COURT-MARTIAL
D. GENERAL COURT-MARTIAL

45. ONE OF THE IMPORTANT PERSONAL CHARACTER TRAITS OF A MASTER-AT-ARMS IS INTEGRITY; INTEGRITY IS DEFINED AS?

A. ENTERING INTO A JOB AS A PROFESSIONAL
B. A KEEN SENSE OF WHAT TO DO OR SAY TO OTHERS
C. FIRM ADHERENCE TO A CODE OF ETHICS (VALUES)
D. THE QUALITY OF BEING JUST, FAIR AND IMPARTIAL

46. WHEN YOU SEARCH A SUSPECT, INCIDENT TO APPREHENSION, YOU MAY REMOVE WHAT FROM THE SUSPECT?

A. WEAPONS ONLY
B. TOOLS OF THE CRIME
C. FRUITS OF THE CRIME
D. ANYTHING

47. WHAT ARE THE THREE AREAS OF THE HUMAN BODY THE MASTER-AT-ARMS WILL NOT STRIKE WITH THE POLICE BATON?

A. HEAD, SPINE AND KNEE CAPS
B. HEART, SPINE AND HEAD
C. SPINE, HEAD AND JOINTS
D. HEAD, HEART AND SOLAR PLEXUS

APPENDIX B

OBJECTIVE AND TEST REVIEW FORM

COURSE TITLE

MAA Afloat Indoc

TRAINING GOAL

HSOJT

OBJ #	TASK LEVEL	SUPP OBJ	ESSENTIAL	NICE-TO-KNOW	UNNECESSARY	TRAINING LEVEL	OBJ CONDITION	OBJ STANDARD	OBJ ACTION	TEST ITEM #	CONDITION MATCH	STANDARD MATCH	ACTION MATCH	TEST APPROP.	TEST ADEQUATE	ENOUGH (TRANSFER)
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
3.1	UUN	UN	V				Y	Y	Y	LX					N	N/A
3.2	UUN	UN	V				Y	Y	Y	LX					N	N/A
3.3	R		V				N	N	N	46	Y	Y	N	N	N	N/A
										47	Y	Y	Y	N	N	N/A

FIGURE 2

FIGURE 4

Appendix C

PRESENTATION CONSISTENCY FORM

Component	Completeness							
Objective #	3.1	3.2	3.3					
1. Statement	C	C	C					
2. Practice Remembering	C	C	C					
3. Feedback	I	I	C					
4. Examples	C	C	X					
5. Practice Using	C	C	X					
6. Feedback	I	I	X					

C = Componment Complete

I = Component Incomplete

N = Component Not Present

FIGURE 5

Appendix D

PRESENTATION ADEQUACY FORMS

Course Title MAA Afloat Indoc.

Obj.# 3.1	Sep.	Iden.	Clear	Helps	Job	Enough	Errors	E-H	Invl
1. Statement	N	N	Y	N	Y	XXX	XXX	XXX	Y
2. Practice Remembering	N	N	N	XXX	Y	Y	N/A	N/A	XXX
3. Feedback	N	N	N	N	N	XXX	XXX	XXX	XXX
4. Examples	N	N	Y	N	Y	Y	N	N/A	
5. Practice Using	Y	Y	Y	XXX	Y	Y	Y	N/A	XXX
6. Feedback	N	N	N	N	N	XXX	XXX	XXX	XXX

Course Title MAA Afloat Indoc.

Obj.# 3.2	Sep.	Iden.	Clear	Helps	Job	Enough	Errors	E-H	Invl
1. Statement	N	N	Y	N	Y	XXX	XXX	XXX	Y
2. Practice Remembering	N	N	N	XXX	Y	Y	N/A	N/A	XXX
3. Feedback	N	N	N	N	N	XXX	XXX	XXX	XXX
4. Examples	N	N	Y	N	Y	Y	Y	N/A	Y
5. Practice Using	Y	Y	Y	XXX	Y	Y	Y	N/A	XXX
6. Feedback	N	N	N	N	N	XXX	XXX	XXX	XXX

FIGURE 5 CONT.

Appendix D

PRESENTATION ADEQUACY FORMS

Course Title MAA Afloat Indoc.

Obj.# 3.3	Sep.	Iden.	Clear	Helps	Job	Enough	Errors	E-H	Invl
1. Statement	N	N	Y	N	Y	XXX	XXX	XXX	Y
2. Practice Remembering	Y	Y	Y	XXX	Y	Y	N/A	N/A	XXX
3. Feedback	Y	Y	Y	N	Y	XXX	XXX	XXX	XXX
4. Examples									
5. Practice Using				XXX					XXX
6. Feedback						XXX	XXX	XXX	XXX

Course Title _____

Obj.#	Sep.	Iden.	Clear	Helps	Job	Enough	Errors	E-H	Invl
1. Statement						XXX	XXX	XXX	
2. Practice Remembering				XXX					XXX
3. Feedback						XXX	XXX	XXX	XXX
4. Examples									
5. Practice Using				XXX					XXX
6. Feedback						XXX	XXX	XXX	XXX

FIGURE 6

Appendix E

INSTRUCTIONAL EFFECTIVENESS CHECKLIST

Instructions: Answer yes or no to relevant questions; do not answer irrelevant questions nor force inappropriate yes or no answers. Use the back of the form to provide additional details as required. Answer the following questions as the lesson progresses.

LEARNING ORIENTATION	Yes	No
Are students given objectives?	✓	
Clarified/amplified (if necessary)?	NA	
Were the students motivated in terms of "why" the content should be learned?	✓	
Were the students motivated re "how" the content should be used?	✓	
Are students told how they will be tested?	✓	
Are students told what they will be tested on?	✓	
Did instructor frequently orient students to job of learning? Was information about the instructional process and what the students were supposed to be doing/learning given?		✓

FIGURE 6 (CONTINUED)

Instructional Effectiveness Checklist (Continued)

INSTRUCTOR BEHAVIOR	Yes	No
Was peer instruction used?		✓
Were external rewards given?		✓
Did instructor establish relationship with students by introducing her/himself? by displaying course/unit/module name? by creating interest in subject? by displaying enthusiasm? by soliciting class cooperation and involvement?	✓ ✓ ✓ ✓ ✓	
Is the instructor's voice level and enunciation adequate?	✓	
Was the instructor free from any distracting mannerisms (e.g.ticks, twitches)?	✓	
Did it appear that the instructor adequately prepared for the lesson?	✓	
Did the instructor urge students to take notes?		✓
At appropriate points in lecture, did the instructor pause and indicate to students they should take notes?		✓
Did Instructor allow students to learn by doing when possible?	✓	
Did instructor ensure that students were actively involved?	✓	
Did instructor monitor student progress?	✓	
Did instructor provide assistance when necessary?	✓	

FIGURE 6 (CONTINUED)

Instructional Effectiveness Checklist (Continued)

INSTRUCTOR BEHAVIOR (CON'T)	Yes	No
Was IG used properly?	✓	
Was Curriculum Outline adhered to?	✓	
Was student comprehension checked?	✓	
Were proper questioning techniques used?	✓	
Was class control maintained?	✓	
Was eye contact maintained?	✓	
Was summary/critique appropriate?	✓	

FIGURE 6 (CONTINUED)
Instructional Effectiveness Checklist (Continued)

MEDIA / MATERIALS	Yes	No
What types of media were used? CHALK BOARD	X	X
Were they appropriate?		V
Were the transparencies,etc., technically correct (easy to read, layout attractive, etc.)		V
Were there sufficient number of instructional aids? (example, could transparencies be used instead of blackboard?)		V
Were they effectively used in separating the various instructional activities/phases/summary?		V
ENVIRONMENT / SAFETY		
Describe significant environmental factors involving light, background noise, temperature, general attractiveness of classroom, etc.	X	X
Was the equipment operational?	NA	
Were necessary tools and test equipment available?	NA	
Was lab clean and free of safety hazards?	NA	
Was two-man rule observed?	NA	
Were safety precautions announced?	NA	
Were students aware of emergency procedures?	NA	
Was emergency first aid procedure posted and visible?	NA	
Were high voltage areas clearly marked?	NA	

FIGURE 6 (CONTINUED)

Instructional Effectiveness Checklist (Continued)

STUDENT BEHAVIOR	Yes	No
Did it appear the students achieved the objectives?	✓	
Did it appear the students took adequate amount of notes?		✓
How involved were the students in the learning process? Circle the most appropriate category listed below that describes the majority of the students.		
ACTIVE INVOLVEMENT Students ask questions, answer questions, volunteer extra information generate information. May go beyond information immediately given and relate to other known information.		✓
ATTENTIVE INVOLVEMENT Students clearly understand and are tracking what teacher is saying. Seem interested. Indicated by alert faces, heads nodding positively, alert posture, smiling, talking to selves.	✓	
PASSIVE INVOLVEMENT Students seem bored and are only marginally paying attention to what is going on in the class. Are able to answer straighforward questions, but do not exhibit a great deal of interest in what is being taught.		✓
NO INVOLVEMENT Students' eyes may be glazed over and may have difficulty staying awake. Can't answer question if called upon. May not even seem to know what lesson instructor is addressing.		✓

APPENDIX B

OBJECTIVE AND TEST REVIEW FORM

COURSE TITLE

_____

TRAINING GOAL

_____

OBJ #	TASK LEVEL	SUPP OBJ	ESSENTIAL	NICE-TO-KNOW	UNNECESSARY	TRAINING LEVEL	OBJ CONDITION	OBJ STANDARD	OBJ ACTION	TEST ITEM #	CONDITION MATCH	STANDARD MATCH	ACTION MATCH	TEST APPROP.	TEST ADEQUATE	ENOUGH (TRANSFER)
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q

Appendix C

PRESENTATION CONSISTENCY FORM

Component	Completeness							
Objective #								
1. Statement								
2. Practice Remembering								
3. Feedback								
4. Examples								
5. Practice Using								
6. Feedback								

C = Componment Complete

I = Component Incomplete

N = Component Not Present

Appendix D

PRESENTATION ADEQUACY FORMS

Course Title_____

Obj.#	Sep.	Iden.	Clear	Helps	Job	Enough	Errors	E-H	Invl
1. Statement						XXX	XXX	XXX	
2. Practice Remembering				XXX					XXX
3. Feedback						XXX	XXX	XXX	XXX
4. Examples									
5. Practice Using				XXX					XXX
6. Feedback						XXX	XXX	XXX	XXX

Course Title_____

Obj.#	Sep.	Iden.	Clear	Helps	Job	Enough	Errors	E-H	Invl
1. Statement						XXX	XXX	XXX	
2. Practice Remembering				XXX					XXX
3. Feedback						XXX	XXX	XXX	XXX
4. Examples									
5. Practice Using				XXX					XXX
6. Feedback						XXX	XXX	XXX	XXX

Appendix E

INSTRUCTIONAL EFFECTIVENESS CHECKLIST

Instructions: Answer yes or no to relevant questions; do not answer irrelevant questions nor force inappropriate yes or no answers. Use the back of the form to provide additional details as required. Answer the following questions as the lesson progresses.

LEARNING ORIENTATION	Yes	No
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Clarified/amplified (if necessary)?		
Were the students motivated in terms of "why" the content should be learned?		
Were the students motivated re "how" the content should be used?		
Are students told how they will be tested?		
Are students told what they will be tested on?		
Did instructor frequently orient students to job of learning? Was information about the instructional process and what the students were supposed to be doing/learning given?		

Instructional Effectiveness Checklist (Continued)

INSTRUCTOR BEHAVIOR	Yes	No
Was peer instruction used?		
Were external rewards given?		
Did instructor establish relationship with students by introducing her/himself? by displaying course/unit/module name? by creating interest in subject? by displaying enthusiasm? by soliciting class cooperation and involvement?		
Is the instructor's voice level and enunciation adequate?		
Was the instructor free from any distracting mannerisms (e.g.ticks, twitches)?		
Did it appear that the instructor adequately prepared for the lesson?		
Did the instructor urge students to take notes?		
At appropriate points in lecture, did the instructor pause and indicate to students they should take notes?		
Did Instructor allow students to learn by doing when possible?		
Did instructor ensure that students were actively involved?		
Did instructor monitor student progress?		
Did instructor provide assistance when necessary?		

Instructional Effectiveness Checklist (Continued)

INSTRUCTOR BEHAVIOR (CONT)	Yes	No
Was IG used properly?		
Was Curriculum Outline adhered to?		
Was student comprehension checked?		
Were proper questioning techniques used?		
Was class control maintained?		
Was eye contact maintained?		
Was summary/critique appropriate?		

Instructional Effectiveness Checklist (Continued)

MEDIA / MATERIALS	Yes	No
What types of media were used? _____	X	X
Were they appropriate?		
Were the transparencies,etc., technically correct (easy to read, layout attractive, etc.)		
Were there sufficient number of instructional aids? (example, could transparencies be used instead of blackboard?)		
Were they effectively used in separating the various instructional activities/phases/summary?		
ENVIRONMENT / SAFETY		
Describe significant environmental factors involving light, background noise, temperature, general attractiveness of classroom, etc.	X	X
Was the equipment operational?		
Were necessary tools and test equipment available?		
Was lab clean and free of safety hazards?		
Was two-man rule observed?		
Were safety precautions announced?		
Were students aware of emergency procedures?		
Was emergency first aid procedure posted and visible?		
Were high voltage areas clearly marked?		

Instructional Effectiveness Checklist (Continued)

STUDENT BEHAVIOR	Yes	No
Did it appear the students achieved the objectives?		
Did it appear the students took adequate amount of notes?		
How involved were the students in the learning process? Circle the most appropriate category listed below that describes the majority of the students.		
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NO INVOLVEMENT Students' eyes may be glazed over and may have difficulty staying awake. Can't answer question if called upon. May not even seem to know what lesson instructor is addressing.		

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